

Best Practices – LaTeX

For Master Thesis and more

Gilles Callebaut – gilles.callebaut@kuleuven.be

```
\documentclass[12pt,a4paper,oneside,draft]{report}

\usepackage[option]{package}

\begin{document}

% Introductory chapters
\chapter{Preface}
% ...

\mainmatter
\chapter{First chapter}
% ...

\appendix
\chapter{First Appendix}
50~€

\backmatter
\chapter{Last note}

\bibliographystyle{plain}
\bibliography{bib}

\end{document}
```

Preamble

Content

Bibliography

Referencing Other Work – Where to find them?

- Academic Documents
 - kuleuven.ezproxy.kuleuven.be
 - IEEE Xplore
 - Google Scholar
 - Limo

Referencing Other Work – How to LaTeX?

What is it?

LaTeX Package

Processing

Database file

Who?

natbib

BibTex

.bib

What is it doing?

Define \cite in .tex document

Bridge together .bib and .tex

Storage of references

.bib

	Key	forename surname and ...	
@misc			or
@techreport		surname, forename and ...	

```
@article{greenwade93,  
  author   = "George D. Greenwade",  
  title    = "The {C}omprehensive {T}ex {A}rchive {N}etwork ({CTAN})",  
  year     = "1993",  
  journal  = "TUGBoat",  
  volume   = "14",  
  number   = "3",  
  pages    = "342--351"  
}
```

—— {{Keep case of Letters}}

```
\cite{greenwade93}
```

Get .bib file

limo.libis.be

scholar.google.com

TWEAK MY RESULTS

Sort by Relevance ▾

Filter by ▲

- Online access (12)
- Peer-reviewed (6)
- Open Access ▲

Lirias type ▲

- Conference proceedings (6) ✕
- Software (3)
- Journal articles (2) ✓
- Internet publication (2)
- Abstracts/Presentations/Posters (1)

Show More

Creation Date ▲

From 2017 To 2019 Refine

Publication status ▲

- Published (6)
- Accepted (4)

TOP

VIEW ONLINE

DETAILS

LINKS

ALTMETRICS

SEND TO

TAGS

mobile platform >

continuous sensing >

TIME SYNCHRONIZATION >

Source Identifier

Lirias

ISBN: 9781538677131

DOI: 10.1109/SAS.2019.8705987

Publication status

Published

Source ID

LIRIAS2732203

Relation

2019 IEEE Sensors Applications Symposium (SAS); 2019; pp. -

Links

[Callebaut, Gilles \[KU Leuven ID\] ▹](#)

[Ottoy, Geoffrey \[KU Leuven ID\] ▹](#)

[De Strycker, Lieven \[KU Leuven ID\] ▹](#)

Altmetrics

?

Send to

EXPORT BIBTEX

ENDNOTE OR REFMAN (RIS)

ENDNOTEWEB

CITATION

PERMALINK

PRINT


E-MAIL

Encoding

UTF-8 ▾

DOWNLOAD

User profiles for Gilles Callebaut

 **Gilles Callebaut**
KU Leuven
Verified email at kuleuven.be
Cited by 6

Cross-layer framework and optimization for IoT Nodes

[G Callebaut](#), [G Ottoy](#), [L Van der Perre](#) - arXiv preprint arXiv:1806.08624 (2018).
Both physical and MAC-layer need to be jointly optimized for efficient use of the energy budget of IoT Nodes. Therefore, a cross-layer design is imperative to design Area networks (LPWANs). In the present paper, a cross-layer design is proposed.

☆ ⓘ Cited by 1 Related articles All 4 versions &

NativeStorage-A Cordova Plugin

[G Callebaut](#) - [lirias.kuleuven.be](#)
NativeStorage - A Cordova Plugin. Publisher: Github; [http://github.com/kuleuven-lirias/cordova-plugin-nativestorage](#). Author: [Callebaut, Gilles](#). android, ios, cross-platform tool. Abstract: This plugin is designed to provide a cross-platform tool for storing data on mobile devices.

☆ ⓘ Cited by 1 Related articles

[PDF] Assessment of data storage strategies for cordova

[G Callebaut](#), [M Willocx](#), [J Vossaert](#) - ... on Mobile Services
The mobile world is fragmented by a variety of mobile platforms. While native applications can fully exploit the capabilities of the mobile platform, limited or no code can be shared between different platforms.

☆ ⓘ Cited by 1 Related articles All 2 versions &

Cite

MLA	Callebaut, Gilles, Geoffrey Ottoy, and Liesbet Van der Perre. "Cross-layer framework and optimization for efficient use of the energy budget of IoT Nodes." <i>arXiv preprint arXiv:1806.08624</i> (2018).
APA	Callebaut, G., Ottoy, G., & Van der Perre, L. (2018). Cross-layer framework and optimization for efficient use of the energy budget of IoT Nodes. <i>arXiv preprint arXiv:1806.08624</i> (2018).
Chicago	Callebaut, Gilles, Geoffrey Ottoy, and Liesbet Van der Perre. "Cross-layer framework and optimization for efficient use of the energy budget of IoT Nodes." <i>arXiv preprint arXiv:1806.08624</i> (2018).
Harvard	Callebaut, G., Ottoy, G. and Van der Perre, L. (2018). Cross-layer framework and optimization for efficient use of the energy budget of IoT Nodes. <i>arXiv preprint arXiv:1806.08624</i> (2018).
Vancouver	Callebaut G, Ottoy G, Van der Perre L. Cross-layer framework and optimization for efficient use of the energy budget of IoT Nodes. <i>arXiv preprint arXiv:1806.08624</i> . 2018.

[BibTeX](#) [EndNote](#) [RefMan](#) [RefWorks](#)

How to use?

Citation Style

%in the preamble

%-----

`\usepackage[square,numbers]{natbib}` % use [1] notation

`\bibliographystyle{IEEEtranN}` % how formatted in bibliography

%-----

%Where the bibliography will be printed

`\bibliography{bibfile}`

Bibliography Style

Clean bibtex file with bibtex-tidy

<https://flamingtempura.github.io/bibtex-tidy/>

```
1 Click Tidy to clean up the entries below
2 @Book{sweig42,
3   Author = { Stefa{n} Sweig },
4   title = { The impossible book },
5   publisher = { Dead Poet Society},
6   year = 1942,
7   month = mar
8 }
9 @article{steward03,
10  author = {Martha Steward},
11  title = {Cooking behind bars}, publisher = "Culinary Expert Series",
12  year = {2003}
13 }
14 @Book{impossible,
15   Author = { Stefan Sweig },
16   title = { The impossible book },
17   publisher = { Dead Poet Society},
18   year = 1942,
19   month = mar
20 }
21
```

BibTeX Tidy

This tool tidies bibtex files by fixing inconsistent whitespace, removing duplicates, removing unwanted fields, and sorting entries.

[Github](#) [Report a bug](#)

▼ WHITESPACE

☒ Indent with tabs

☐ Indent with spaces

☒ Align values

Align values at column:

Tidy

Abbreviations

```
\usepackage[acronym]{glossaries}
```

```
\makeglossaries
```

```
\newacronym{iot}{IoT}{Internet-of-Things} % default expression for defining a new acronym
```

```
\newacronym[plural=LPWANs,firstplural=Low-Power Wide-Area Networks (LPWANs)]{lpwan}{LPWAN}{Low-Power  
Wide-Area Network}
```

```
\begin{document}
```

```
\gls{iot}
```

```
\glspl{lpwan}
```

```
\acrlong{iot}
```

```
\acrshort{iot}
```

```
\acrfull{iot} % outputs: Internet-of-Things (IoT)
```

```
\end{document}
```

Tabular – Fixed Column Width

```
\begin{center}
  \begin{tabular}{l l l p{5cm}}
    \hline
    Day & Min Temp & Max Temp & Summary \\ \hline
    Monday & 11C & 22C & A clear day with lots of sunshine.
    However, the strong breeze will bring down the temperature.
    Tuesday & 9C & 19C & Cloudy with rain, across many northern
    across most of Scotland and Northern Ireland,
    but rain reaching the far northwest. \\ \hline
    Wednesday & 10C & 21C & Rain will still linger for the morning.
    Conditions will improve by early afternoon and continue
    throughout the evening. \\
    \hline
  \end{tabular}
\end{center}
```

Day	Min Temp	Max Temp	Summary
Monday	11C	22C	A clear day with lots of sunshine. However, the strong breeze will bring down the temperatures.
Tuesday	9C	19C	Cloudy with rain, across many northern regions. Clear spells across most of Scotland and Northern Ireland, but rain reaching the far northwest.
Wednesday	10C	21C	Rain will still linger for the morning. Conditions will improve by early afternoon and continue throughout the evening.

Tabularx – Autowidth columns

X specifier

|

```
\begin{tabularx}{\textwidth}{ccccX }
\hline
label 1 & label 2 & label 3 & label 4 & \\
\hline
item 1 & item 2 & item 3 & heel veel tekst
die automatisch schaalt naar de inhoud. & \\
\hline
\end{tabularx}
```

label 1	label 2	label 3	label 4
item 1	item 2	item 3	heel veel tekst die automatisch schaalt naar de inhoud.

Table – Environment for Tabular(s)

h	Place the float here, i.e., approximately at the same point it occurs in the source text
t	Position at the top of the page.
b	Position at the bottom of the page.
p	Put on a special page for floats only.
!	Override internal parameters LaTeX uses for determining "good" float positions.
H	Places the float at precisely the location in the LaTeX code. Requires the float package

|

```
\begin{table}[position specifier]
  \centering
  \begin{tabular}{|l|}
    ... your table ...
  \end{tabular}
  \caption{This table shows some data}%
  \label{tab:myfirsttable}
\end{table}
```

www.tablesgenerator.com

Tables Generator

[LaTeX Tables](#)[HTML Tables](#)[Text Tables](#)[Markdown Tables](#)[MediaWiki Tables](#)[Contact](#)

LaTeX Tables Generator

[Facebook](#)

4781

[Twitter](#)[File](#) [Edit](#) [Table](#) [Column](#) [Row](#) [Cell](#) [Help](#)[Show an example table](#)

	A	B	C	D	E	F	G	H	I	J	K	L
1		\$w = 8\$				\$w = 16\$				\$w = 32\$		
2	\cmidrule{2-4} \cmidrule{6-8} \cmidrule{10-12}	\$t=0\$	\$t=1\$	\$t=2\$		\$t=0\$	\$t=1\$	\$t=2\$		\$t=0\$	\$t=1\$	\$t=2\$
3	\$c\$	0.0790	0.1692	0.2945		0.3670	0.7187	3.1815		-1.0032	-1.7104	-21.7969
4	\$c\$	-0.8651	50.0476	5.9384		-9.0714	297.0923	46.2143		4.3590	34.5809	76.9167
5	\$c\$	124.2756	-50.9612	-14.2721		128.2265	-630.5455	-381.0930		-121.0518	-137.1210	-220.2500
6	\$c\$	0.0357	1.2473	0.2119		0.3593	-0.2755	2.1764		-1.2998	-3.8202	-1.2784
7	\$c\$	-17.9048	-37.1111	8.8591		-30.7381	-9.5952	-3.0000		-11.1631	-5.7108	-15.6728
8	\$c\$	105.5518	232.1160	-94.7351		100.2497	141.2778	-259.7326		52.5745	10.1098	-140.2130

[Generate](#)

Result (click "Generate" to refresh)

[Copy to clipboard](#)

```
1 % Please add the following required packages to your document preamble:
2 % \usepackage{booktabs}
3 % \usepackage{graphicx}
4 \begin{table}[]
5 \centering
6 \resizebox{\textwidth}{!}{%
7 \begin{tabular}{@{}lrrrrrrrrrr@{}}
```

Booktabs! Beautiful Tables

signal processing concept	algebraic concept (coordinate free)	in coordinates
filter signal filtering impulse impulse response of $h \in \mathcal{A}$	$h \in \mathcal{A}$ (algebra) $s = \sum s_i b_i \in \mathcal{M}$ (\mathcal{A} -module) $h \cdot s$ base vector $b_i \in \mathcal{M}$ $h \cdot b_i \in \mathcal{M}$	$\phi(h) \in \mathbb{C}^{I \times I}$ $\mathbf{s} = (s_i)_{i \in I} \in \mathbb{C}^I$ $\phi(h) \cdot \mathbf{s}$ $\mathbf{b}_i = (\dots, 0, 1, 0 \dots)^T \in \mathbb{C}^I$ $\phi(h) \cdot \mathbf{b}_i = (\dots, h_{-1}, h_0, h_1, \dots)^T \in \mathbb{C}^I$
Fourier transform spectrum of signal frequency response of $h \in \mathcal{A}$	$\Delta : \mathcal{M} \rightarrow \bigoplus_{\omega \in W} \mathcal{M}_\omega$ $\Delta(s) = (s_\omega)_{\omega \in W} = \omega \mapsto s_\omega$	$\mathcal{F} : \mathbb{C}^I \rightarrow \bigoplus_{\omega \in W} \mathbb{C}^{d_\omega}$ $\Leftrightarrow \phi \rightarrow \bigoplus_{\omega \in W} \phi_\omega$ $\mathcal{F}(\mathbf{s}) = (\mathbf{s}_\omega)_{\omega \in W} = \omega \mapsto \mathbf{s}_\omega$ $(\phi_\omega(h))_{\omega \in W} = \omega \mapsto \phi_\omega(h)$

signal processing concept	algebraic concept (coordinate free)	in coordinates
filter	$h \in \mathcal{A}$ (algebra)	$\phi(h) \in \mathbb{C}^{I \times I}$
signal	$s = \sum s_i b_i \in \mathcal{M}$ (\mathcal{A} -module)	$\mathbf{s} = (s_i)_{i \in I} \in \mathbb{C}^I$
filtering	$h \cdot s$	$\phi(h) \cdot \mathbf{s}$
impulse	base vector $b_i \in \mathcal{M}$	$\mathbf{b}_i = (\dots, 0, 1, 0, \dots)^T \in \mathbb{C}^I$
impulse response of $h \in \mathcal{A}$	$h \cdot b_i \in \mathcal{M}$	$\phi(h) \cdot \mathbf{b}_i = (\dots, h_{-1}, h_0, h_1, \dots)^T \in \mathbb{C}^I$
Fourier transform	$\Delta : \mathcal{M} \rightarrow \bigoplus_{\omega \in W} \mathcal{M}_\omega$	$\mathcal{F} : \mathbb{C}^I \rightarrow \bigoplus_{\omega \in W} \mathbb{C}^{d_\omega} \Leftrightarrow \phi \rightarrow \bigoplus_{\omega \in W} \phi_\omega$
spectrum of signal	$\Delta(s) = (s_\omega)_{\omega \in W} = \omega \mapsto s_\omega$	$\mathcal{F}(\mathbf{s}) = (\mathbf{s}_\omega)_{\omega \in W} = \omega \mapsto \mathbf{s}_\omega$
frequency response of $h \in \mathcal{A}$	n.a.	$(\phi_\omega(h))_{\omega \in W} = \omega \mapsto \phi_\omega(h)$

Booktabs! Beautiful Tables

```
\usepackage{booktabs}
\newcommand{\ra}[1]{\renewcommand{\arraystretch}{#1}}

\begin{table}
\centering
\ra{1.3} % increase row spacing
\begin{tabular}{@{}lll@{}}%
\toprule
% header
\\
\midrule
% body of table
\\
\bottomrule
\end{tabular}
\caption{Caption}%
\label{tab:label-tab}
\end{table}
```

After:

concept	abstract	realized
shift operator	q	$T_1(x) = x$
shift operation	\diamond	\cdot
space mark	t_n	C_n
k -fold shift operator	$q_k = T_k(q)$	$T_k(x)$
space shift	$q \diamond t_n = \frac{1}{2}(t_{n+1} + t_{n-1})$	$x \cdot C_n = \frac{1}{2}(C_{n+1} + C_{n-1})$
signal	$\sum s_n t_n$	$\sum s_n C_n(x)$
filter	$\sum h_k T_k(q)$	$\sum h_k T_k(x)$

Consistent labels!

ch:	chapter
sec:	section
subsec:	subsection
fig:	figure
tab:	table
eq:	equation
lst:	code listing
itm:	enumerated list item
alg:	algorithm
app:	appendix subsection

Consistent labels!

ch:	chapter
sec:	section
subsec:	subsection
fig:	figure
tab:	table
eq:	equation
lst:	code listing
itm:	enumerated list item
alg:	algorithm
app:	appendix subsection

```
\cref{fig:example}  
\cref{tab:example}  
\cref{ch:hfdstk1}  
\cref{eq:emc2}
```

Figuur 1.1

Tabel 1.1

Hoofdstuk 1

Vergelijking (1.1)

SI Units

```
\usepackage{siunitx}
```

```
A  $\text{\SI{45}{\degree}}$  angle or a  $\text{\ang{45}}$ .
```

```
It is  $\text{\SI{17}{\degreeCelsius}}$  outside.
```

```
\num{1000}
```

```
\num{3.45d-4}
```

```
\si{kg.m/s^2} %unit only
```

```
\SI{10}{\percent}
```

```
\SI{68}{kg}
```

A 45° angle or a 45°.

It is 17°C outside.

1000

3.45×10^{-4}

kg m/s²

10 %

68 kg

Include code snippets with highlights

```
% in preamble

\usepackage{minted}

% after \begin{document}

\begin{listing}[ht]
\inputminted{python}{hello_world.py}
\caption{Hello World}
\label{listing:hello-world}
\end{listing}
```

Common mistakes/issues

- LaTeX has a special meaning for: `& % $ # _ { } ~ ^ \`
You need to escape these symbols: `\&`, `_`, `\\`, `\#`, `\%`, ...
If you want to use them as characters
- Do not use `\\` or `\newline` to start a new line, use a blank line instead
- Use `` `quotes"` instead of `"qoutes"`
- Please expand this list by sending a mail to gilles.callebaut@kuleuven.be, if you encounter a "common mistake/problem/issue".



Master Thesis Template KU Leuven

<https://www.overleaf.com/latex/templates/master-thesis-template-ku-leuven/jxshykvppkfd>



Features & Benefits ▾

Templates

Help ▾

Projects

Account ▾

Master Thesis Template KU Leuven

Open as Template

View Source

Download PDF

Author Gilles Callebaut (KU Leuven)
License Creative Commons CC BY 4.0
Abstract Master Thesis Template KU Leuven

Tags

International Languages

University

Thesis

Dutch

Katholieke Universiteit Leuven (KU Leuven)

Find More Templates

KU LEUVEN

FACULTEIT INDUSTRIELE
INGENIEURSWETENSCHAPPEN
TECHNOLOGIECAMPUS GENT

Titel masterproef, maar nu wat langer

Ondertitel (facultatief)

Voornaam ACHTERNAAM

More Tips and Tricks

- Thesis specific: <https://dramco-edu.github.io/Thesis-Tips-and-Tricks/>
- LaTeX specific: <https://github.com/dramco-edu/LaTeX>